

REMARKS

I. INTRODUCTION

In response to the Office Action dated March 26, 2003, claims 1, 32 and 44 have been amended. Claims 1-82 remain in the application. Entry of these amendments, and re-consideration of the application, as amended, is requested.

III. DOUBLE PATENTING REJECTION

Claims 1 and 44 are provisionally rejected under the judicially created doctrine of double patenting over claims 1 and 33 of copending Application No. 09/614,224.

Applicants' attorney submits herewith a Terminal Disclaimer and Certificate under 37 C.F.R. §3.73(b).

IV. NON ART REJECTION

Claims 1-82 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

Applicants' attorney has amended the claims to address some of these rejections; however, Applicants' attorney traverses others of the rejections.

With regard to the rejections of claims 1, 2-6, 15, 18, 22, 29-30, 32 and 40, as they relate to "epitaxial structure," "amplifier," and "common waveguide," Applicants' attorney asserts that these terms are sufficiently definite in light of the specification. Moreover, Applicants' attorney notes that the terms were found sufficiently definite for the Office Action to apply the Welch reference against the terms. Consequently, Applicants' attorney requests that the rejections be withdrawn.

With regard to the rejections of claims 44 and 45-75, Applicants' attorney also asserts that these terms are sufficiently definite in light of the specification. Again, Applicants' attorney notes that the terms were found sufficiently definite for the Office Action to apply the Welch reference against the terms. Consequently, Applicants' attorney requests that the rejections be withdrawn.

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V. PRIOR ART REJECTIONS

A. The Office Action Rejections

On page (6) of the Office Action, claims 1-6, 15, 18, 22, 29-30, 32, 40, 44, 45, 51, 52, 63, 64, and 66 were rejected under 35 U.S.C. §102(b) as being anticipated by Welch et al., U.S. Patent no. 5,539,571 (Welch).

Applicants' attorney respectfully traverses these rejections in light of the amendments above and the arguments below.

B. Applicants' Independent Claims

Applicants' independent claim 1 is directed to a diode laser assembly, comprising:
a substrate;

an epitaxial structure formed on the substrate;

a laser formed in the epitaxial structure, the laser including first and second reflectors, a gain section and a phase section, the gain section and the phase section each being positioned between the first and second reflectors to produce a tunable laser output therefrom; and

an amplifier formed in the epitaxial structure, at least a portion of the laser and amplifier sharing a common waveguide, the tunable laser output being coupled to the amplifier along the common waveguide, and the amplifier generating an optical signal in response to the coupled tunable laser output, wherein at least a portion of the waveguide is curved to reduce reflections from an output facet.

Applicants' independent claim 44 is also directed to a diode laser assembly, comprising:

a first semiconductor layer in an epitaxial structure;

a second semiconductor layer formed in the epitaxial structure, the first and second semiconductor layers having different dopings;

a waveguide layer formed between the first and second semiconductor layers, the first waveguide layer including a waveguide, a first reflector and a second reflector;

an optically active medium disposed between the first and second reflectors, the first and second reflectors defining a laser cavity and producing a tunable laser output; and

an amplifier formed in the epitaxial structure, wherein the laser cavity and the amplifier are optically aligned, the tunable laser output being coupled into the amplifier along the waveguide, and

the amplifier generating an optical signal in response to the coupled tunable laser output, wherein at least a portion of the waveguide is curved to reduce reflections from an output facet.

C. The Welch Reference

Welch describes an optical amplifier semiconductor device, which is differentially pumped and a master oscillator power amplifier (MOPA) device employing such an amplifier. The amplifier allows the light propagating therein to diverge along at least part of its length, and may be a flared amplifier having a gain region that increases in width toward its output at a rate that equals or exceeds the divergence of the light. The amplifier is pumped with a current density at its input end, which is smaller than the current density used to pump the output end for maintaining coherence of the beam to high power levels. Differential pumping may be both longitudinal and lateral within the amplifier. A single mode preamplifier section may be optically coupled to the input end of the amplifier. The amplifier input may have a width, which is the same as or wider than that of the preamplifier output. The preamplifier may have a constant mode width or may be tapered to alter the divergence of the beams provided to the amplifier section. The laser oscillator in the MOPA device may be a single mode DBR laser diode monolithically integrated on the same substrate as the optical amplifier. Laser sources external to an amplifier chip may also be used. The input portion of the amplifier or the preamplifier section, if present, may be modulated. The laser oscillator might also be modulated if it has a high Q cavity. Tunable laser oscillators are also disclosed.

D. Applicants' Claimed Invention Is Patentable Over The References

Applicants' attorney respectfully submits that Applicants' claimed invention is patentable over the Welch reference. Specifically, Applicants' attorney asserts that the references, taken individually or in combination, do not teach or suggest the structure recited in Applicants' independent claims 1 and 44. Instead, the reference describes a device having a different structure, which operate by means of different steps.

Specifically, Welch does not show at least a portion of the waveguide being curved to reduce reflections from an output facet. The curved waveguide allows the majority of the device to have an axis aligned with a desired crystal axis for improved optical properties that is perpendicular to the facet. In contrast, Welch describes a device of significantly different structure, which is made by means of different process steps.

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Thus, Applicants submit that independent claims 1 and 44 are allowable over Welch. Further, dependent claims 2-43 and 45-82 are submitted to be allowable over Welch in the same manner, because they are dependent on independent claims 1 and 44, respectively, and thus contain all the limitations of independent claims 1 and 44. In addition, dependent claims 2-43 and 45-82 recite additional novel elements not shown by the references.

VI. CONCLUSION

In view of the above, it is submitted that this application is now in good order for allowance and such allowance is respectfully solicited. Should the Examiner believe minor matters still remain that can be resolved in a telephone interview, the Examiner is urged to call Applicants' undersigned attorney.

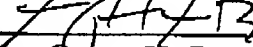
Respectfully submitted,

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